DOCUMENT RESUME

ED 265 365 CE 043 326

AUTHOR Collins, Paul D.
TITLE Human Capital Formation in the Post Industrial Society.
PUB DATE 7 Dec 85
NOTE 8p.; Paper presented at the Annual Convention of the American Vocational Association (Atlanta, GA, December 6-10, 1985).
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Educational Improvement; Educational Needs; *Educational Philosophy; *Educational Responsibility; Educational Trends; Education Work Relationship; *Futures (of Society); Postsecondary Education; Problem Solving; *Relevance (Education); *Role of Education; School Role; Secondary Education; Skill Development; Social Responsibility; *Vocational Education
IDENTIFIERS *Entropy

ABSTRACT

Entropy is defined as that condition in which the lack of order, information, and energy prevent useful work. What does vocational education contribute to the order, information flow, and useful work in industry and society? Is vocational education the appropriate method for extracting meaning, providing new information, new order, and new life in a society that may be sliding into catastrophic, irreversible entropy? Often, vocational education offers not a general preparation for life but narrow skill training for occupations that are soon obsolete. This training often excludes what it is convenient not to know, is controlled by conventional thinking that is hostile towards the new, and is a captive of established structures whose goal is simplification and convenience. New approaches to vocational education are necessary for survival. Vocational educators must generalize skills, develop a common set of attitudes, foster common expectations, and teach curriculum commonalities. These needs are all connected by complexity, organization, separability, continuity, sequentiality, interdependence, and self-regulation. These factors are all connected, and should be taught that way. (KC)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

HUMAN CAPITAL FORMATION IN THE POST INDUSTRIAL SOCIETY *

By Paul D. Collins, Ph.D.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

P Collins

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ED265365

I wish to communicate three things to Vocational Educators.

1) I want to define entropy as I understand it.
2) I want to examine it as it applies to vocational education.
3) I want to make a recommendation.

Entropy (or times arrow) is seen as that condition where the lack of order, information, and energy prevent useful work.

According to Moore, you can't win; the best you can do is break even, you can break even only at absolute zero and you can't reach absolute zero.

Boltzman said that all systems deteriorate, going from high order and low entropy to low order and high entropy.

Shannon states that entropy is linked to information.

Weaver says that in highly organized systems with little randomness or choice, information is low.

Kelly, Tillman, Russell and Hofstader say we identify meaning in information by perceiving that a message exists and then use the appropriate method to extract it. You will get noise or meaning.

Schrodinger states that as long as systems dissipate the entropy they create by the intake of new information, they avoid disintegration.

Palgar says that evolution by replication and environment modification retards entropy.

Marwitz states flatly, information is the source of order.

*Speech to the National Convention of the American Vocational Association in Atlanta, Georgia, December 7, 1985

CE043326

Rifkin says that successive economics and social organizations have developed with successively more sophistication means of extracting energy, and we are at a watershed in energy and social systems.

Rothstein states that organizational capability of a system parallels channel capacity.

Davis says that vocabulary control and subject classification increase order in stored information.

So? So what is the meaning of this in vocational education? What does vocational education contribute to the order, information flow and useful work in industry and society? And further, is vocational education the appropriate method for extracting meaning, providing new information, new order, and new life in a society that is, (if Boltzman's law is correct) sliding fast into catistrophic irreversible entropy?

What is the channel capacity of vocational education? What determines vocabulary control and subject classification and is the information stored or free flowing in vocational education? Can we increase the power and effectiveness of vocational education without increasing its complexity?

*What is the best possible probabilist use of vocational education? Not from the view of the supplier but the user.

What is the best way to deal with the uncertain and ambiguous future?

Are the goals specified in the vocational education system the correct ones in terms of all those in the system, or are they dangerously narrow and self-centered? Is our inner sub-system adapted to the outer environment? Or are we giving the students a one way ticket to

unemployment?

Does our system work?

For whom?
For how long?
For what?

What the schools teach is of vital importance. If it is more selfishness and greed, psychic entropy is assured.

Look around you in the world. Do you see a real growth in human love and understanding? Have our institutions been overtaken by events? Most of the work we do is becoming economically meaningless: As is the very concept of work, who knows what new kinds of work will emerge.

With the present practice of our educational system, what will the students be prepared for? What work will they turn to? How long will human labor be cheaper than robots?

How long do the welders, painters, machinists, toolmakers, machine operators, inspectors and assemblers have? How long do they have before they are shunted into service jobs in a secondary labor market? What are the unemployed to do in an economy that doesn't require millions of manual workers?

Perspective and self interest makes some want to keep the answers vague. What is the balance to be struck between what is technically possible and economically rational? First generation robots replaced workers at the rate of 2½ to 1, second generation robots do it at the rate of 10 to 1. In essence it is not technical complexity or economic or technical rationality but power and political choice. What about retraining industrial workers and finding jobs for the yet unborn?

The consequences of the engineers ingenuity, are whose responsibility? Dislocation, distress, unrest will be overcome, by long term benefits,

for whom?

What about the unions whose members' jobs are being lost to robots or foreigners? Yes, what about them? How will they organize a huge permanent workless class? Their membership has dropped from 32 million in the 1970's to 18 million today. Yes, how about the unions?

What to do with the fortress mentality, the smugness, the complacency at mediocrity which is now standard? What to do about the elaborate alternatives for maintaining the status quo? What to do about the earnest platitudes and fearful self-righteousness that have replaced reasoned argument?

Yes what to do about the reduction in the numbers of students.

What to do about dwindling resources
What to do about special interest groups
What to do about legal, judicial, and political intrusions
What to do about demographic and sociopolitical considerations
What to do about the fact that control has passed out of the hands of educators and into others' hands whose motives are not known.

In the past vocational education has not been supportive of critics inside the system. This forced consensus has resulted in loud criticism from without, and loss of control.

Will vocational education continue to fight a rearguard holding action till overrun?

Will vocational education content itself with cosmetic innovation?

Vocational Educators:

The bell tolling in the distance is tolling for all of us!

Opinion polls are no substitute for wisdom and judgment, and remember, demographers count everything and value nothing. Fads in education have trivialized it - it is an activity of the utmost importance and is often not easy or pleasant.

The increasingly sophisticated economy requires more education, at a higher level of training, not just for the few, but for the many. Sophisticated, cross discipline, multiple, a reinforcing, generalized vocational education. (Heads on - then hands on or the student will maim or kill himself or others)

The new depends on the knowledge pool and this depends on the information flow and you must bring them all in.

Is vocational education efficient? Is vocational education flexible? Is vocational education resiliant? Can it meet the challenge? Is it up to tangential change with new emphasis on the early acquisition of cross disciplinary multiple skills?

Yes! That and more! The age of certified make-believe is over. Where does the person with one skill go in this age of change? Specialized education has too often produced formalized conforming, unpliable workers that are narrowly practical with limited competence in narrow fields, not people with breath, originality and creativity. They fit well into a vanishing job market where 80% of the jobs have been deskilled - dumb - down and far too often vocational education has stepped in to re-train these obsolete specialists, in new specialties, soon made obsolete.

Where does all this lead? It leads to whirling incoherence, manipulation, dependency, imposed needs, stifled growth, isolation, entropy and absolute zero.

Slogans, posturings, and heady pronouncements won't cure the P.C.B.s in our food, the radio activity in our water, the carcinogens in our lungs, the red ink in our bank accounts or the 25% drop-out rate in our schools. Those who use complexity, secrecy, bluff and

smugness close the channels of communication and prevent themselves from seeing the progress of their own disease.

Our students come to us brutalized by movies and stupified by T.V. We offer a mockery of pretended choice which is accepted because there is no alternative. We have had 100 years of specific skill job training to reduce poverty, shiftlessness and more decay.

Vocational Educators - Look around you, at our society!

General flexible vocational education has been realized in specific skill training where specialists

- Exclude what is convenient not to know
- Are denied knowledge from a full range of life and work
- Controlled by conventional thinking which is hostile towards the non-conformist, intolerant of the new, fierce in public puritanism, and rigidly patriotic
- Are captives of established structures whose goal is simplification and convenience

Vocational Educators look around you, at our society!

Confront the question! What should we do? Ask the hard irritating question and you will get the answer.

We can let the closely linked variables in vocational education interact dynamically for survival. New multivariate approaches are necessary--cross fertilization - new analogies - new relationships.

We can synthesize the elements into a coherent pattern of:

1) Generalizing skills
2) Develop a common set of attitudes
3) Foster common expectations
4) Teach curriculum commonalities

It's all connected by:

1) Complexity
2) Organization
3) Separability
4) Continuity

5) Sequentiality
6) Interdependence
7) Self-regulation

It's all connected, let's teach it that way! Let's give the students generalizable, multiple, reinforcing skills. Let's give them the skills before the life is lived.

The goals of all education is freedom, human emancipation. This is achieved as it has always been achieved by us; the educators, the researchers, the planners, the administrators, the teachers; we, we; must make it happen, we must make the tangential change and we must make it now!

It's all connected, all part of one great whole and if we might see it as the poet Blake saw it

"A world in a grain of sand
A heaven in a wild flower
Hold infinitely in the palm of your hand
And eternity in an hour"

Thank you!

Paul D. Collins, Ph.D.